

OVARIAN ECTOPIC PREGNANCY: EVALUATION BY TRANSABDOMINAL COLOR DOPPLER US IN THE EMERGENCY WARD



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1. Purpose

The purpose of this study is to evaluate the diagnostic value of colour-Doppler US and the spectral forms of pulsed Doppler in ovary ectopic pregnancies in the emergency ward.

2. Materials and Methods

Eleven women with suspected ectopic pregnancy were examined in the emergency ward from January 1994 to March 2005. The main symptoms of patients were sensitivity or pain at clinical examination in the lower abdomen and/or vagina bleeding. In 9 women the pregnancy was confirmed by positive urine test.

Initial examination by transabdominal sonography of the pelvis was followed by pulsed colour Doppler imaging of the ovary and of any suspected latero-uterine abnormal vascularity. The resistive index (RI) of blood flow in the ovarian arteries was measured.

The uterus was first scanned for evidence of an intrauterine pregnancy. Evidence included thick endometrium, identification of gestational sac, yolk sac, fetal pole, and/or fetal cardiac pulsations. The presence of free pelvic fluid, and whether the fluid was clear or echogenic were also noted.

The ovaries were investigated to locate a solid or saclike mass separate from the uterus. We specifically noted the presence of an extrauterine fetal pole, yolk sac, or fetal cardiac pulsations. Differential diagnosis include corpus luteum cyst and tumors of the ovary.

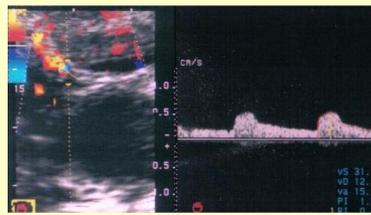


Figure 1. Colour Doppler imaging in a pregnant woman with peripheral hypervascularization of the ovary. The pulsed Doppler spectrum revealed a low-impedance flow.

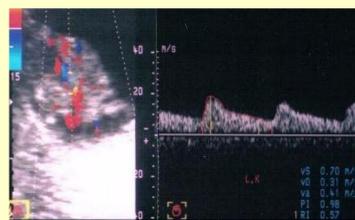


Figure 2. Colour Doppler imaging in a woman with abdominal pain and suspected ectopic pregnancy. Color flow with irregular hypervascularization and low resistance vascular signals in complex right adnexal mass.



Figure 3. Colour Doppler imaging in a pregnant woman with abdominal pain and positive urine test. Ectopic pregnancy in the left ovary with high-impedance flow.



Figure 4. Colour Doppler imaging in a woman with abdominal pain. Corpus luteum cyst which was misdiagnosed as ectopic pregnancy.

3. Results

Colour Doppler ultrasound imaging revealed five patients with peripheral hypervascularizations (**Fig. 1**), four with irregular hypervascularizations (**Fig. 2**) and two with avascular ectopic pregnancies in the ovary. The pulsed Doppler spectrum revealed a low-impedance flow in 9 patients (RI <0.60) and a high-impedance flow (**Fig. 3**) in 2 patients (RI >0.80-1).

One corpus luteum cyst was misdiagnosed as ectopic pregnancy (**Fig. 4**). The ectopic pregnancy was seen on the same side as the corpus luteum in 7 of 10 cases.

Free pelvic fluid was observed in 10 patients. Seven cases demonstrated echogenic fluid while fetal cardiac pulsations were observed in one out of 11 confirmed ectopic pregnancies.

4. Discussion

The spectral waveform of the ovarian artery depends on ovarian activity. In general, an "inactive" ovary produces more difficult CDS signals, while an ovary in "action" gives signals that are detected more easily.

The presence of high blood flow is in correlation with the presence of corpus luteum and the relation of it with the pregnancy helps in the investigation of the ectopic pregnancy.

The blood flow alterations (e.g. increased values) are easily detected by CDS, and can contribute important information for the evaluation of ectopic pregnancies, especially in the emergency department.

5. Conclusion

The abnormal implantation and ovarian trophoblast invasion in ectopic pregnancy can cause more marked blood flow changes in the adjacent supplying vessels than in the main ovarian arteries and this, as examined by colour Doppler ultrasound, can facilitate the diagnosis of ectopic gestation in the ovary in the emergency ward.